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## **Introduction - Handbook of Stemmatology : History, Methodology, Digital Approaches**

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# Introduction

This volume provides an interdisciplinary introduction to stemmatology as a branch of textual criticism that studies textual genealogy. The point of departure which finally led to this book were a number of workshops, the “*Studia stemmatologica*”, organised by Tuomas Heikkilä, Teemu Roos, and Petri Myllymäki, beginning in Helsinki in January 2010. After a couple of meetings, some of the participants decided, again in Helsinki two years later, to set up an online lexicon of terminology used in stemmatology, the *Parvum lexicon stemmatologicum* (PLS), housed first at the University of Bergen and then (and still now) at the University of Helsinki ([wiki.helsinki.fi/display/stemmatology](http://wiki.helsinki.fi/display/stemmatology)). This project was initially edited by Odd Einar Haugen (from 2012 to 2015), then taken over by Caroline Macé and me, and reached a first final version in November 2015. A fixed PDF copy of this lexicon briefly covering some 250 terms can be freely downloaded at [zora.uzh.ch/id/eprint/121539](http://zora.uzh.ch/id/eprint/121539). In 2015, the main contributors to this online lexicon decided that a fuller and stricter treatment of the different fields involved in stemmatology would be useful, and I volunteered to become the editor-in-chief. We decided to cover the topic in eight chapters, each with its own chapter editor: Elisabet Göransson (Lund), Odd Einar Haugen (Bergen), Marina Buzzoni (Venice), Tara Andrews (Vienna), Aidan Conti (Bergen), Joris van Zundert (Amsterdam), Caroline Macé (Göttingen), and Armin Hoenen (Frankfurt am Main). In contrast to the PLS, this book offers longer essays covering the process of determining the genealogical relationship between witnesses of a text and editing it. It also adds a historical dimension covering the development and use of traditional and computerised genealogical methods, and considers various aspects of the approaches involved further, including how they differ between fields. Essays about the current approaches in nine philological fields in chapter 7, written by specialists in those fields, also give it a wider and more practical scope. The book can still serve as a lexicon to a certain extent: definitions of important terms can be found via the general index and are highlighted in the text.

In the field of what may be called “stemmatology”, many very different branches of scholarship and science come together, and it is quite impossible for one individual to keep track of all of them today. This book tries to remedy this situation by providing an introduction to this vast field written by specialists in many different branches, from philologists and linguists to biologists and computer scientists. The computerised methods in the field of textual criticism come from other fields that share a common problem: understanding descent with modification. In the case of stemmatology, the objects copied with modification are linguistic expressions, in particular written texts. In some cases, the changes texts have undergone due to repeated copying over long periods of time can be reconstructed very well and, among other things, this can help to reconstruct a text closer to the original than any of the surviving witnesses (the critical edition). Other fields study similar situations, albeit not in relation to texts but, for instance, concerning living

beings (see chapter 8). Mathematical and software solutions from one evolutionary field may be useful in others (as discussed in chapter 5).

The book's contributions are written for a general academic audience; care has been taken to ensure that the texts are also understandable to non-specialists: terminology has been defined and explained, and examples and illustrations provided to make the content more easily accessible. Although the book's structure is progressive, thus inviting readers to peruse the volume from beginning to end, single chapters and sections of the book can be read independently as well. To facilitate this, there are cross-references within the book, as well as indexes at its end, which provide quick access to topics treated in the book (sometimes by different authors in different sections and contexts). The reader will quickly realise that the authors come from different fields and schools. Even so, differences in terminology and opinion are surprisingly insignificant, thanks to the fruitful discussions that have taken place between the authors and editors over the past three years.

As for the terminology used in the field of textual criticism, several aids already exist. There is a neo-Latin dictionary of terminology in the field (Springhetti 1962), and several introductions to editing methodology and terminology have been published over the past twenty years: for methodology, Greetham (1995) in general and, focusing on oriental philology, Bausi et al. (2015) in English; for terminology, G. L. Beccaria (2004) and Gomez Gane (2013) in Italian, and Duval (2015) in French. In contrast to these works, the present book has a wider scope. It includes both the traditional and computerised new approaches to this topic, and tries to cover the topic both theoretically and practically. For broader and more general accessibility, we decided to follow the trend in the natural sciences and to write the entire book in English only, but the book is full of quotations in other languages: they are given in their original form and complemented with an English translation. Despite being written fully in English, a glance at the list of contributors at the end of the book shows how many linguistic and methodological backgrounds the authors hail from. Indeed, one of the primary goals of this book is to present the approaches of various schools and fields which are still too often confined to their own linguistic contexts. Of course, different scholarly fields must have their own specific approaches for their specific problems, but we believe that there is a large enough common basis for all approaches dealing with the genealogical relations between textual witnesses to allow the description of a common framework in what, it seems, could well be treated as a single field.

The general, historical development of these schools may be summarised very briefly as follows (for more detail, see chapter 2). In the nineteenth century, the German and French schools of Karl Lachmann (1793–1851) and Gaston Paris (1839–1903) respectively may be seen as foundational for the genealogical method, but radical dissent on the part of Paris's pupil Joseph Bédier (1864–1913) rapidly ensued; he is still influential among many French philologists (see 2.3). On the other hand, Paul Maas (1880–1964), who wrote a very influential, almost algorithmic

manifesto of Lachmann's method in 1927, can be seen as a champion of a German approach. Less well known outside its own country, the twentieth-century Italian school of textual editing contributed crucial improvements to the original method. Both theoretical and practical studies by scholars such as Giorgio Pasquali (1885–1952), Gianfranco Contini (1912–1990), Sebastiano Timpanaro (1923–2000), or Cesare Segre (1928–2014) have deepened our understanding of the genealogy of texts significantly and shown that matters are much more complex and cases much more varied than they seem when reading Lachmann or Maas, but also that there are solutions to the problems uncovered by Bédier (see 2.4 below). Indeed, many of the desiderata of the New Philology (another more recent Anglo-French school dating back to 1990) had been answered by Italian scholars half a century before they were raised. The recent publication of Gomez Gane's (2013) and Duval's (2015) lexicons may show a growing awareness of the problem of differences in terminology between the main languages used in this field. In this vein, the present book adds a comparative table of important terminology in the four most important languages in the field – English, French, German, and Italian – at the end. Besides these differences between what might be called German, French, and Italian schools, there are of course also significant differences between the various fields dealing with historically transmitted texts. Traditionally, classical philology, Romance scholarship, and biblical scholarship can be seen as the three most distinct and influential such fields. They roughly correspond to the textual transmission of authoritative texts, of more fluid ones, and of overabundant traditions. This fact alone can already account for much of the methodological divergence between these three fields. Over the past few decades, methods making use of phylogenetic computerised approaches have also been applied to textual traditions – again, of course, with their own vocabularies. The present book was written by specialists from all of these fields, though the same depth could not, of course, be reached in all cases. For instance, biblical philology is treated somewhat marginally (primarily in 2.3.5, about Quentin, and in 7.1, discussing the Greek New Testament). In general, our focus is more on literary works, while practical or legal documents or charters are only covered in passing. The crucial difference is that the former are “works” of a fixed extension with an (at least) putative author and were perceived as such by most scribes and editors copying or editing them. Such works are abstract entities embodied by single manifestations (textual witnesses) which can, therefore, have their own textual genealogy for study by stemmatology. Less well fixed, growing “works”, such as florilegia, glosses, or commentaries, can still be studied with similar methods (see 3.2), but they are not central to this book.

### **What is stemmatology?**

The parts of textual criticism dealing with the genealogical dependencies between witnesses of texts can be termed “stemmatology” or “stemmatics”. It is the

genealogical tree of the transmission of a text, the *stemma codicum* (see 4.1), which provides the name. The term “stemmatology” is usually used as synonymous with “stemmatics” (e.g. by the *OED*). As with many other fields, the endings “-ology” (from λόγος, “word, meaningful or scientific utterance”) and “-ic(s)” (the adjective-forming suffix -ική, feminine because the feminine noun τέχνη, “art, field of study”, is implied) tend to be used for the same purpose, namely to label a “scientific field about X”. If a difference between the two terms is perceived, “stemmatology” tends to be the wider term, whereas “stemmatics” may be confined to the method of genealogical reconstruction often named after Karl Lachmann (Duval 2015, 241–242, mentions both possibilities for the corresponding French terms).

The number of schools and approaches dealing with such textual reconstruction and the tools available for it have multiplied ever more quickly over the past century. Computer tools have made many steps in editing a text easier and faster; moreover, computer simulations now also allow scholars to study the behaviour of large amounts of textual data used as models, which opens up new possibilities for understanding the processes of textual transmission (see 5.1). Stemmatology as described above is a branch of textual criticism. Textual criticism may be seen as the scientific study of the origins and development of texts in general (hence its Russian name, *tekstologia*, “textology”, with the “-ology” suffix). In contrast, stemmatology is more restricted in scope: its focus lies on the genealogy of textual traditions. This can be studied practically, with the goal of untangling a concrete case of a textual tradition, or *in abstracto*, seeking to understand in general how textual traditions tend to behave. In the former case, an edition of the text in question is often the main goal. In either case, the strongest tool for the endeavour are shared indicative errors (see 2.2). The question of what exactly qualifies as such is an important question that this field studies (see 6.2.2).

Although the process of finding the stemma of a text’s transmission can be described in very mathematical terms (as Maas did), on a closer look it becomes clear that there are crucial parts in the process that stubbornly refuse to yield to algorithmic description. This has led some extreme contemporary currents (see 2.3) to dismiss reconstructive textual criticism as a scholarly or scientific discipline, likening the method of common errors to something that does not work and rejecting the ensuing editions as composite and unreal, the whole endeavour as not worthwhile. The often heated debates about the possibilities of scientific methodology in the study of texts are, unfortunately, too often pursued by people who have never edited a text themselves. Those who have know that it is indeed often difficult to find shared indicative errors and to determine which reading is the primary and which the secondary one (the latter alone can define families of witnesses). Indeed, it often takes a long time of familiarising oneself with a text and its contexts to understand its transmission. Our discipline is to such an extent a practical art (*ars*) that it can hardly be grasped without getting one’s hands dirty by trying for oneself. Everyone who has tried to edit a historically transmitted text with at least a moder-

ately complicated transmission – of (say) half a dozen witnesses – knows that the process of finding the correct genealogical tree is an iterative process, to some extent even a circular activity, typical of what is called the “hermeneutic circle” among German philosophers. This is so because we usually start the process knowing very little about the original text or, often, about its author, his habits of writing, and the environment in which the text was written, possibly not even the century it was written in or whether it grew considerably over time. But in order to determine the direction of copying between witnesses (what is called “polarising the tree”; see 4.3.1), one cannot do without such information. As one continues studying the extant witnesses in more detail, things that were initially unclear become clearer: phrases that one may have taken as “obviously” original, for instance, turn out to be later additions. Thus, the textual critic goes through non-linear stages, approaching an ever-better understanding of the tradition under scrutiny. This process is, indeed, not so much circular as comparable to a spiral. Although one seems to move in circles in two dimensions, one’s understanding does improve in a third, metaphorical dimension. This same process can be observed at a much lower level of complexity when transcribing a difficult manuscript, one in hardly legible handwriting or badly damaged by time. With every new pass through the text, one understands more and sees more. Although such a process can clearly go wrong and a palaeographer or a textual editor may become convinced of things that are unfounded, in both these disciplines a strong consensus is usually reached among experts about the point up to which things can safely be said and the point from which they become mere speculation or even plain wrong. In short, this circularity does not imply that the process is unscientific; but it does imply that it is hard to program it in full. The book will show that computers facilitate much in this field but that we are nowhere near having computer tools that can algorithmically produce a stemma and a critical text from a bundle of scanned manuscripts.

The same is, of course, true in other fields. So the often-heard question of whether textual scholarship is a mere “art” or actually a “science” finds an easy answer: it is both. As an art, it produces a work (as *artes* in Latin usually did and do), in this case an edition of a text following the best available methods – a text that is the best hypothesis of how the text was at some point in time that can be reached with the available information. But, as the general search for a general understanding of how texts are handed down in time, it is as much a scientific discipline as the English language permits for fields in the humanities (it may be noted in passing that, in contrast to English, most other European languages subsume much more than the natural and mathematical sciences under *science*, *Wissenschaft*, *scienza*, *nauka*, ἐπιστήμη). Detractors of the claim that textual criticism is scientific may mention errors and the difficulties of proving, for instance, that one stemma is the true one while another is wrong; but every science works on hypotheses and they are often hard to test. Often they cannot be confirmed at all, and merely cannot be refuted, as Karl Popper (1965) would demand in general for

science. Wrong stemmata can certainly be refuted, though there may remain unclear cases (as in any other science). It may be added that claiming that the genealogical method does not work is an easy way out for some scholars today who would rather not spend much time and effort learning it and thus seek “short cuts” when editing a text.

### **Structure of the book**

This book consists of eight chapters organised in forty sections of some five to thirty pages each, written by a total of thirty-eight authors. Each chapter has been taken care of by a chapter editor who has also provided a brief introduction to his or her chapter stating its main goals. Information about the authors and editors can be found at the back of the volume. In keeping with the process just described of arriving at the best possible understanding of a textual tradition, the structure of the book is not fully linear either: important points are sometimes taken up again in different contexts.

The book begins with a description of the material commonly used in our field in chapter 1, edited by Elisabet Göransson: what kind of transmissions are usual, what material carrying the texts is to be expected, what auxiliary disciplines study these material contexts and how? The focus here is on the Graeco-Roman and then European tradition, which is the basis of most modern approaches to the study of texts. It is instructive to see differences in other cultures, so chapter 7, which provides case studies of the usual approaches in a number of fields, includes some that have been more or less isolated from the European approach: philology in China (7.7) or Ethiopia (7.5). Then, some historical background and the basic concepts of the genealogical, reconstructive method of textual criticism are provided in chapter 2, edited by Odd Einar Haugen: from its roots in Greek Antiquity (Alexandria) to its scholarly formulation among mostly German nineteenth-century philologists and to the debates about and improvements of the method in the twentieth and early twenty-first centuries. Then, the necessary first steps towards inferring the genealogy of a textual tradition are discussed in chapter 3, edited by Marina Buzzoni: how are witnesses found, what sources of information besides witnesses bearing the full text can be used, how is their information about the text gathered and worked with? These steps will, in many cases, lead to the proposal of a stemma. The stemma, important elements in it such as the archetype, and common problems such as contamination are therefore considered in greater detail and more formally in chapter 4, edited by Tara Andrews. So far, the book has dealt mostly with traditional textual criticism; chapter 5, edited by Joris van Zundert, then goes into some depth introducing computational aspects, studying how the information from various witnesses can be dealt with computationally. Some necessary mathematical background in graph theory is provided. Informatics tools are also presented and the relationship between computational and traditional philologists explored, including

criticism of the new methods. Chapter 6, edited by Aidan Conti, reunites the different threads into a bigger picture: what kinds of edition are possible, and which ones are preferable under certain circumstances? How should the insight gained into the tradition be presented in an edition? For the traditional print edition, there are standards and established approaches. For the relatively young digital medium, these are still more fluid and evolving.

The remaining two chapters go further afield: as already mentioned, chapter 7, edited by Caroline Macé, presents short case studies in order to provide more concrete material on how textual critics work, giving a sample of nine different fields. Both similarities and differences become clear, as does the fact that methods are exchanged between fields and discussed, sometimes harmoniously, sometimes controversially. The last chapter – chapter 8, edited by Armin Hoenen – provides overviews of other fields that use evolutionary models. Techniques and approaches can be taken from these fields or offered to them. In general, it would seem that the evolutionary ideas of the nineteenth century produced new and unexpected insights into many parts of science and of life in general. This movement is often associated with the name of Charles Darwin (1809–1882), who used the expression “descent with modification” frequently in *The Origin of Species* (Darwin 1859), but it would seem that this new way of thinking about change was already in the air: from the geologist James Hutton (1726–1797) and the demographer Thomas Robert Malthus (1766–1834) around the turn of the nineteenth century, to naturalists such as Alfred Russel Wallace (1823–1913) or Darwin himself around the middle of the nineteenth century in biology. Similar evolutionary ideas were being voiced by linguists such as August Schleicher in the early 1850s (see 8.2), but textual critics such as Lachmann were already very much into studying descent with modification in the 1830s, two decades before Darwin’s pivotal publication. At any rate, this new approach in science brought new insights not only into the evolution of living beings but also in very different fields, such as that of textual criticism.

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significantly, as well as to a number of anonymous internal and external peer-reviewers who helped the editors beforehand.

### **Practicalities**

The book is made more accessible by a general index covering persons, authors, works, and technical terms, as well as a special one of cited manuscripts. There is one common bibliography for all contributions. The back matter also includes a list of terminology as used in the most important languages in the field (English, French, German, Italian) and brief information about the volume's authors.

In general, we have tried to keep the technical knowledge necessary to read this book to a minimum. Examples are always also translated into English, and scripts other than the Latin and Greek ones are transliterated. To this end, the ISO 259 transliteration system for Hebrew, *Hanyu pinyin* without tone marks but accompanied by Chinese characters for Chinese, and the International Alphabet of Sanskrit Transliteration for Sanskrit are used. Edited historical texts are usually quoted by the name of the editor; the editions are included in the general bibliography.

Vosa, Switzerland  
Pentecost 2019

Philipp Roelli